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Adults' Education And Agricultural Innovation: A Social Learning Approach

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Abstract

Social learning processes can be the basis of a method of agricultural innovation that involves expert and empirical knowledge. In this sense, the objective of this study was to determine the effectiveness and sustainability of an innovation process, understood as social learning, in a group of small farmers in the southern highlands of Peru. Innovative proposals and its permanence three years after the process finished were evaluated. It was observed that innovation processes generated are maintained over time; however, new innovations are not subsequently generated. We conclude that adult learning processes and innovation based on social learning are more effective and sustainable; however, the farmers internalization in innovation processes is given longer term.

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Keywords: innovation; social learning; adults' education; agriculture;

1. Introduction:

The current situation of small farmers is far from being solved even though development strategies have been investigated for many years. Until a few decades ago, these strategies were based on the need to introduce new technologies tested in experimental centers; the biggest dilemma was how to get farmers to adopt these new external technologies (technology transfer). This linear approach positioned farmers only as beneficiaries of the new technologies.

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However, experience shows that many of the new technologies in the rural countryside failed to produce the expected results due to the lack of interest on the part of the farmers, little flexibility to adapt to personal preferences, and lack of proactivity. This strategy started to change in time as professionals faced questions such as: Are technicians assuming a role that is not theirs? Facing new technologies, does the lived (or traditional) experience- knowledge of the farmer not have any value? The answers to these questions, along with the poor results of technology transfer, provided evidence that the adult education, including that of farmers, cannot start from scratch, but must be based on the fact that these adults already have certain experiences that have taught them to act in one way or another. The experience and actions of farmers are influenced by their culture and worldview. This means that the farmer needs to be looked upon as a person with the same potential as anyone else, but with a different path of knowledge. The concepts of participation and appreciation of local culture are now recognized as important and have led to a number of strategies that put the farmer at the center of his/her development, thus leading to development processes that are mainly endogenous. However, these processes cannot reduce the agricultural producer´s context only to his/her geographical space. The current reality of many farmers implies their relationship with the context, which, due to the effect of globalization is not limited to the physical bounds of the territory, but the whole world and trends that are set in it, which are observed in a changing market and the political, social and environmental processes to consider. It is this changing and complex environment that requires farmers to become innovative. The majority of the rural population in Peru (58%) is located in the Andean region (Instituto Nacional de Estadística e Informática, 2008). The Andes are characterized by a rugged topography with altitudes that range from 2,000 meters above sea level (MASL) to up to 4,000 MASL. This creates a number of difficulties in transportation and in establishing fields with large tracts of land, thus small-scale farming is customary. On the other hand, Andean communities are still quite different from urban areas of Peru as there still exist such concepts as mutual aid and working together in the Andean culture. Within this context, innovation systems appeared as a way through which many of the Andean communities looked for an alternative solution to improve their economic and social situation without necessarily having to depend on the State (Fernandez-Baca, Montoya, & Yañez, 2010). For community development, it is necessary to promote a synergy between indigenous and external knowledge (especially scientific knowledge) to generate locally-adapted alternatives that can solve new problems (Quiroz, 1999; cited by Ortiz, 2006). The province of Aymaraes, located in the southern highlands of Peru, represents one example of the innovation systems approach. In Aymaraes, the construction of a new road that links the cities of Lima and Abancay, while also passing through several towns of the province, generated greater access to the market for small producers, but under unfair trading conditions. A group of small farmers in the province were selected to apply the methodology to generate agricultural innovation processes from the social learning approach and agricultural innovation systems. This paper aims to assess the effectiveness and sustainability of this methodology by the evaluation of its results over time.

2. Literature Review:

The term innovation refers both to the process and the achievement of results (Albuquerque, 2008). For this reason, it is no longer enough to demonstrate the generation of knowledge as a result of research projects, but it is necessary to show that these projects are being adopted and are generating wealth and well-being or are at least helping to expand the density of the "cloud of knowledge" which will eventually cause “technological rain” (Muñoz & Santoyo, 2010). The concept of innovation requires knowing and understanding the perceptions and dynamics of different actors because every innovation process affects different players with diverse and dynamic behaviors. People, particularly those with limited resources in developing countries, need to learn to innovate (Douthwaite, Beaulieu, Lundy, & Peters, 2009). It is necessary to leave the linear approach. Existing approaches to technology transfer do not fit the resource-poor farming context of the South (Scoones & Thompson, 1994; Chambers, 1993; Leeuwis, 2004). Theoretical approaches to innovation have been changing over the years, evolving from the linear and relatively simple approach of innovation diffusion to a more complex and as yet insufficiently explored approach to innovation systems, which fits well with the increased number and diversity of stakeholders currently involved in agricultural innovation (Ortiz, et al, 2013). Therefore, the participation of different actors, which share their knowledge and interests through a system, is needed to generate innovation. The innovation systems approach arose in the mid-1980s as a Schumpeterian perspective that was significantly influenced by the literature on

evolutionary economics and systems theory (Speilman, 2005; cited by Agwu, Dimelu, & Madukwe, 2008). Conceptualization of Innovation Systems is also valid for agricultural production because and the context of agricultural innovation systems (AIS) requires an understanding of how individual and collective capacities are strengthened and how these capabilities are applied to agriculture, suggesting the need to focus less on the provision of information (such as research organizations, universities) and more on systemic practices and behaviors that affect organizational learning and change (Spielman, Ekboir, & Davis, 2009). Agricultural innovation adoption is considered as a significant and necessary component in agricultural development activities (Jamsari et al., 2012). Agricultural extension, from the innovation systems approach, is more related to a process of interaction where knowledge does not only go in one direction but is bidirectional. Agricultural extension is best conceptualized as the generation and exchange of knowledge as such (rethink and reflect in an interactive process); the purpose and process are relevant and should be emphasized (Bonye, Alfred, & Seidu, 2012). This has proven to be much more effective in the learning process of farmers who, as adults, have a journey and an experience to value. Based on current trends, the concept of innovation includes several aspects, among which, innovation occurs when there is a continuous learning and the opportunity to learn is a function of the intensity of the interactions between agents (Agwu, Dimelu & Madukwe, 2008). Advancing agricultural innovation means building institutionally sustainable innovation systems which can be gauged by growing interrelations between the participants in the innovation system, an intensive communication between all stakeholders and a strong 'social embedding' (Anandajayasekeram et al, 2008; cited by Zhou, 2010). It is important to note that the foundation of all learning is confidence, which can be developed more easily when there is a horizontal relationship between the actors. In this sense, Working with People approach (Cazorla, De los Rios, & Salvo, 2013), may be valid to ensure innovation processes from social learning, as it indicates as its first principle the respect and priority of people, which are fundamental to be considered in any strategy design and technical innovation elements. Therefore, when faced with two different approaches and learning processes, as in the relationship between technical and small producers, the more the beggining is based on respect and the prioritization of people, the more opportunities people will have to learn from each other. Consequently, there cannot be exist sustainable innovation processes that do not start with the empowerment of the farmers themselves. Many researchers, individual farmers, public and private institutions, and NGOs have attempted to introduce new technologies, but they have only been successful when they have formed horizontal collaborative networks (Muñoz & Santoyo, 2010). Social processes in social engineering-based agricultural extension are more project-oriented (dissociative), while social processes in social learning-based extension tend to be cooperation-oriented due to the shared interest in achieving program goals such as skill and knowledge improvement (associative) (Ekasari et al., 2013). An important element of an innovation system is the set of social networks through which actors can interact with each other (Rycroft & Kash, 1999, Malerba, 2005, Mowery & Sampat, 2005; cited by Spielman, Davis, Negash, & Ayele, 2011). These networks are the means that allow entrance to new knowledge, opportunities and threats to the producers´s environment. To be successful, any change in strategy must be adapted to the particular situation of a farn Such adaptations can be achieved by a systemic process of characterization, diagnosis, redesign, implementation and evaluation planned as a learning process with farmers and technical advisers as main participants (Dogliotti et al., 2013). For this, it is required that the systemic intermediaries play as innovation brokers, whose main purpose is to build appropriate linkages in innovation systems, and facilitate multi-stakeholder interaction in innovation (Klerkx, Hall & Leeuwis, 2009). This role could be played by the innovative farmers. A competent extension system can facilitate both the initial adoption and diffusion of innovations if 1) the system is focused on innovative and organized farmers and 2) there is a continuous flow of information from existing sources, both from research and other participants in the value chain (McMahon & Valdés, 2011). Extension and research staff will be accountable to farmer clients through the participation of farmer organizations and emerging agricultural structures in decision-making processes, and supported to ensure that they have a say in formulating policies that affect them (Al-Rimawi & Al-Karablieh, 2002; cited by Jadalla et al. 2011).

3. Methodology

The innovation process was carried out over two years (2009-2010) and had a group of farmer leaders

(promoters) as the nexus between the field technicians and the farmers. A total of 35 leaders were trained in the communities to serve an average of 1,000 farmers. The training process was based on promoting leadership attitudes. Additionally, to show appreciation of local knowledge, internships were developed for farmers to partake in new experiences to enrich their knowledge and build networks. To evaluate the effectiveness of the innovation process, a study was conducted based on the evaluation of semi-structured interviews at the end of system's implementation (in late 2010). For the evaluation of the sustainability of innovations, new semi-structured interviews were conducted with leading producers and farmers three years later. Comparisons were made between the 2010 and 2013 interviews, taking into account two innovation processes that were defined in the case study: change in fruit production and new market alternatives.

4. Results

4.1. Innovation and process' efficacy

Taking into account the market and resources of the area, the dialogue with the farmers revealed that, apart from the traditional crops, many of them had begun production of fruit trees. The difficulty arose when the farmers realized that the avocado variety that they had was of no value to the market and that they needed to change their traditional management activities and implement the culture of grafts of commercial varieties. The concern of the farmers generated a greater organization among themselves; in each district, they set up a nursery where farmer leaders were trained by technicians in the practice of grafting. Using their experience of group work, the nurseries were tended to by the labor of all stakeholders with a person responsible for keeping record of the labor contributions, which was taken into consideration when distributing the plants. Analyzing the information at the end of the case study, the result was the installation of 11 nurseries that offer services to 170 families and, due to the work of the grafts, the production of a total of 23.63 hectares of fruit, especially avocados, with varieties with market demand. Due to the need to sell their products for a better price and avoid the middlemen, technicians raised the need for the farmers to organize themselves to sell their products. However, the participating farmers did not think this was a feasible activity due to the heterogeneity of their products (which is hard to modify because they reserved part of the harvest for their own consumption), different harvest times, and distrust about collective selling. This is when the proposal of participating in local fairs in their own districts emerged from the farmers themselves. This also required the local authorities to define spaces and regulate the activities. The assessment conducted at the end of the case study found that 361 families had organized access to five agricultural fairs that took place once a year.

4.2. Sustainability of innovations

After the interviews conducted with a total of 51 farmers, it was found that they alone had increased the production of new crop varieties to a total of 93 Hectares; thus, on average, each producer increase his/her amount of harvested land from 0.14 Hectares to 0.43 Hectares in a period of three years. This shows that innovation has already become part of the management system of producers. It also shows a difference in the areas where new varieties were implemented by leading farmers in comparison to other producers (0.30 Hectares and 0.13 Hectares respectively), which clearly shows the innovative character and role of the leaders in the dissemination of what they experienced as interesting. When we asked about the use of the nursery, it was observed that many of the nurseries were no longer used because, after generating knowledge and skills in the production of the nursery, the producers had decided to grow individually and according to their individual needs. Based on the interviews, 72.25% of producers indicated that they had not bought seedlings in the last year. Among these producers, 43.24% indicated that they were already producing their own seedlings. Another very frequent answer to the same question was lack of space (40.44 %). When the final evaluation was complete, it was found that 37.25% of the farmers were offering their products at local fairs, while 15.69% were sending their products to an external market. Importantly, there was still a total of 27.45% that did not have access to the market. Another interesting aspect of this innovation process is that one district has started its own Sunday market, which allows producers to have a higher profit margin. While not asked in a specific question, it was also found that the sale of the new varieties led to an increase in price from 3

to 4 times greater than the original price paid to each farmer.

4.3. Other findings in the analysis three years later

When analyzing the work of the promoters in this case study, it was observed that almost none of them maintain the close relationship with other producers that they had at the end of the study. This shows that the input of the innovation process was still in the hands of technicians and that more time is required, as indicated by the promoters, to learn more and have more experience. Collective action and the development of an agriculture innovation system required the joint activities that were initially developed by a non-governmental organization (NGO) and then increasingly trusted to local farmers (Hellin, 2012).

5. Conclusions:

Promoters have been a nexus, as they have recognized the potential of their own territory and culture, and crossed this potential with the knowledge of the technicians and the environment. In this sense, it has cut the bias produced by the differential that is always established between the technician and the farmer. These developers are the ones who later have sought to influence their own countrymen and local authorities to make the innovation process become more efficient and sustainable as shown by the results of this case study. This would mean that a true innovation for farmers should be one that, based on their own experience, can, in a flexible and genuine dialogue with the technicians, get to judge the context - in the broad sense - around them, taking other factors into account such as the social and political economic environment (market). This claims from the technicians and the farmers, a sight of respect and appreciation for others, as indicated by the Working with People (WWP) approach. However, it requires more continuous work from farmers to take an increasingly active role in agricultural innovation and development so that they can perceive even better the importance of this role and also start to assess their skills and knowledge.

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